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# ***Interactive comment on “Phytoplankton community structure in the North Sea: coupling between remote sensing and automated in situ analysis at the single cell level” by M. Thyssen et al.***

**Anonymous Referee #1**

Received and published: 4 December 2014

The aim of this paper is to develop specific approaches to characterize the phytoplankton community structure and its high frequency variation in time and space. For this purpose, the authors combine plankton community structure using automated flow cytometry and remote sensing algorithm such as PHYSAT. The manuscript is well written and the topic is very interesting and relevant for environmental and ocean colour researches. I do recommend it for publication, however the authors should improve the paper (see comments above).

General comments:

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The authors are interested in a regional area of the North Sea. They have used ocean colour data within 4 km of spatial resolution. Maybe, the study could improve using satellite images with 1.1 km of spatial resolution.

Once PHYSAT has been applied, the frequency of occurrence of the two distinct anomalies (N1 and N2) were very low. Can you explain why these percentages are very low? Could authors explain the phytoplankton community that include N1 and N2?

Minor comments:

Page 15625, Lines 14-15. You can include more studies perform with PHYSAT in regional scales such as Mediterranean Sea.

Page 15630, Lines 25. Please, give more information about the turbid mask using in this study.

Page 15631, Line 5. Although PHYSAT is a well know method established in the scientific literature, I think that the authors should give more information about PHYSAT method using in this study.

Page 15635, Line 11. Which LUT has been used to calculate Ra?

Page 15635 , Line 15. Explain why authors did not use the Ra 555 nm.

Figure 9. Please, include in fig 9c and 9d the threshold from Table 3 to compare with the individuals spectra.

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Interactive comment on Biogeosciences Discuss., 11, 15621, 2014.

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